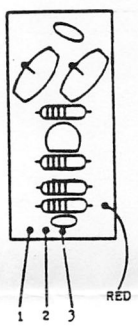
GENERAL INSTALLATION NOTES

For proper performance the filter must be correctly installed in the radio's IF strip. This normally involves nothing more than removing an interstage coupling capacitor and installing the CG INPUT & OUTPUT bare wires into the empty capacitor holes, and then grounding the middle bare wire and connecting the RED wire to the +DC voltage source. The specific models lists on the last two pages tell which capacitor to remove, and which hole is INPUT & OUTPUT.

SPECIAL NOTE, AM-only RADIOS: Many AM-only radios use an 11.275 MHz IF, not 10.695 MHz. Obviously, the CG will not work on them. However an 11.275 MHz crystal installed in place of the interstage coupling capacitor will really sharpen up the bleedover rejection. Don't forget to solder a ground wire to the crystal's metal can and to chassis ground. If interested we have a small supply of these crystals @ $10 each. Contact CB CITY INTERNATIONAL for details. A few radios use an IF of 9.785 MHz; you can do the same thing here.

SPECIFIC INSTALLATION



1 = INPUT
2 = GROUND
3 = OUTPUT
RED = +VDC

The sketch at right shows the filter connections. With the parts side up and the RED wire on your right, the 3 bare wires are (left to right): INPUT, GROUND, OUTPUT. Simply place the INPUT and OUTPUT wires into the 2 holes vacated by the coupling capacitor you remove. Solder the center GROUND wire to any convenient ground point; usually you can just tack it on to the nearest IF can. Also shown schematically is the general installation point between IF amplifier stages. Connect our RED wire to a convenient source of DC operating voltage, usually +8 -13.8 VDC. The easiest hook-up point for this is right at the switch lugs of the ON/OFF/VOLUME control of a mobile or base rig. Connect to the lug on the switched side of the switch so that there is no power applied unless the radio is turned on.

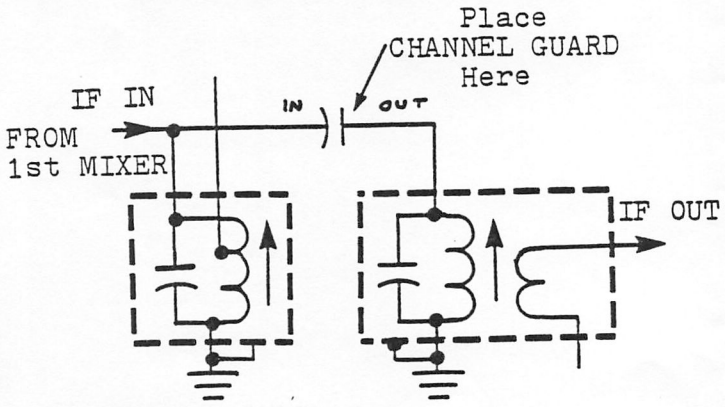
(1) TYPICAL BANDPASS FILTER

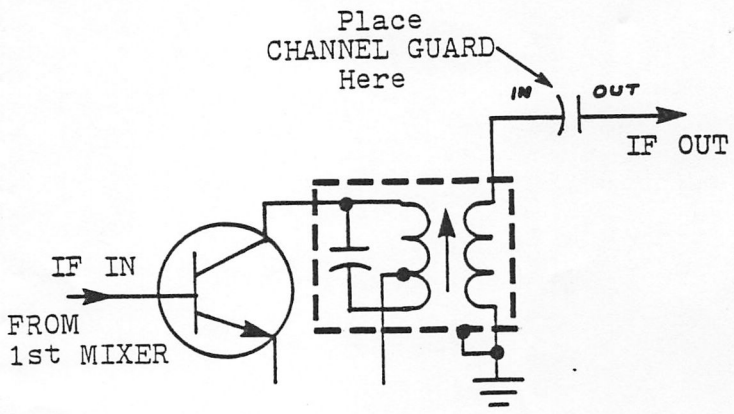
Many rigs use a 2 or 3 transformer coupling filter. Each can is coupled by a small (2-5pf) capacitor. Remove this & install C.G. filter here.

OR

(2) TYPICAL IF AMP STAGE

Each IF stage using a transistor amplifier is usually coupled by a capacitor. Remove the coupling cap. & install C.G. filter here.



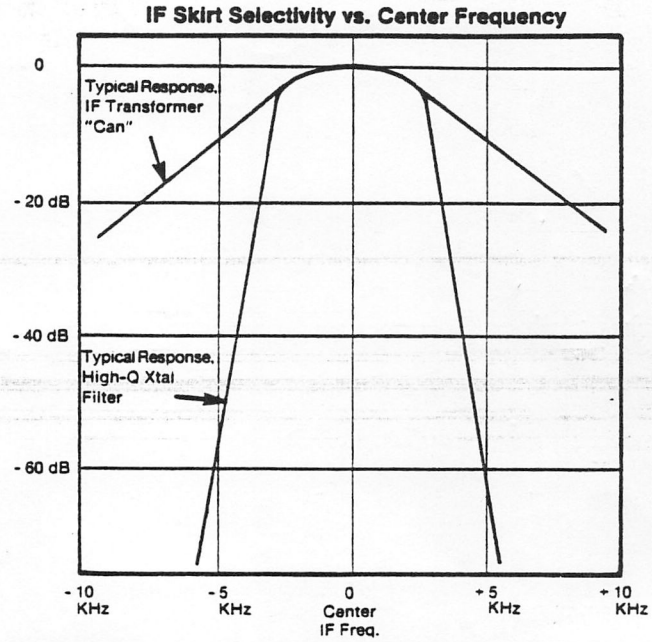


INSTALLATION INSTRUCTIONS

CHANNEL GUARD High-Frequency Crystal IF Filters

This series of crystal filters for 10.695 MHz CB receiver IF circuits are designed to sharply increase receiver "bleedover" rejection by narrowing the IF "skirt" selectivity around the center of the radio's IF pass-band. The filter uses two high-Q crystals and a loss-compensation amplifier to achieve this result.

All CBs have tuned transformers between IF amplifier stages to help produce the receiver selectivity. However the "Q" (Selectivity Factor) of such transformers isn't nearly as high as that of a crystal. The graph illustrates this difference. While both curves begin at the 0 dB point being roughly 6 KHz wide, the typical IF transformer is very broadbanded, and even at ± 10 KHz from center, attenuation is minimum. Any strong signal on the adjacent channel can easily cause bleedover interference to the desired signal. Compare this curve to that of the crystal filter. The skirts are very narrow and and any signal just slightly off the center IF frequency is sharply reduced. The result: A dramatic drop in adjacent-channel interference.



FILTER PLACEMENT

The exact placement of the filter in the IF chain is very important and can make a difference in receiver performance. There are two schools of thought regarding its location:

1. Placing the filter very early in the IF strip, such as immediately following the first mixer, will help establish the overall receiver selectivity. Many rigs use only a single conversion process for both SSB and AM, or else they down-convert a second time for AM (& FM) later in the circuit. Thus placing the filter in the early stage means that it will work in all modes.

2. Noise is normally generated within the IF amplifiers themselves. If the filter is placed further down the IF strip toward the Detector end, such noise can be reduced, resulting in improved sensitivity as well as selectivity. Noise is broadbanded in nature and the less noise that gets through to the Detector, the better the Signal-to-Noise Ratio of the receiver.

A few of the better base rigs already use two IF filters. All AM/SSB rigs use a multipole crystal filter which is switched to operate on both RX and TX. This is the large metal can about 2" x 1" on the main chassis. During RX, it provides basic IF selectivity. During SSB TX, it's used to eliminate one of the two sidebands. The second filter (if present) is a monolithic device which looks just like a regular crystal but has 3 wires instead of 2. "Monolithic" means that it has two quartz elements that share the same physical ground in a single crystal can. It's a cheap way of using two "crystals" in one can rather than 2 individual crystals (which are sharper-tuning) such as our filters use.

In most installations the best placement is early on, immediately following the First Mixer stage; the extra selectivity will reduce extremely strong close signals which might otherwise de-sensitize the receiver strip.

AM/SSB

10.695 MHz Applications List

Note: All the following rigs use a Cybernet chassis and PLL02A chip unless otherwise noted.

Single-Board U.S. versions; main PC Board is usually PTBM048A0X:

Boman CB950, Colt 480, 485, 485DX, 1000, 1200, Gemtronics GTX-77, G.E. 3-5825A, JC Penney 981-6247, Lafayette Telsat SSB-140, Midland 78-976, 79-892, Palomar 2900, RCA 14T302, HyGain 2705 (V), 3108 (VIII), Truetone CYJ4837A-87, JIL SSB-M6 w/PTBM058C0X:

A wire (marked "C") runs from one secondary terminal of T10 (the terminal not going to C111/R88) to a foil pad containing one end of C122 and D12; this pad is near T13. Cut this wire and install the filter in series. (IN = T10 end, OUT = C122/D12 end).

DAK Mark X only: Cut gray shielded cable that connects T10/C121 to CF1/D12. Install filter in series. (IN = T10/C121, OUT = CF1/D12).

Double-Board U.S. versions; PTBM085C0X/PTRF005D0X

G.E. 3-5825B, 3-5875A (Superbase), Midland 78-574, 78-999, 79-891, SBE LCBS-4; Remove C279 on PTRF005D0X RF board. (IN = Q210/T207, OUT = T208) Note: G.E. Superbase board may be numbered PTRF004D0X.

Double-Board Foreign versions:

PTBM059C0X main board w/PT0S006A0X or PTSY016A0X PLL/FM board.

Ham International Concorde, Multimode II, Jumbo, HyGain V, Lafayette 1200FM, Major M360, M588:

A wire (marked "C") runs from one secondary terminal of T10 (the terminal not going to C111/R88 to a foil pad containing one end of C122 and D12 on the main PTBM059C0X board; this pad is near T13. Cut this wire and install the filter in series. (IN = T10 end, OUT = C122/D12 end).

Foreign versions with PTBM121D4X main board:

Colt 320FM, Ham International Concorde II, Tristar 747. A wire marked "H" runs from one secondary terminal of T12 (the terminal not going to C116/R90) to the pad marked "I" next to T13 (that contains one end of C120/D14). Remove wire from "I".
IN = wire from T12, OUT = "I" (C120/D14 junction next to T13).

Foreign versions with PTBM125/131A4X main board:

Colt 1600DX, 2000DX, HyGain 8795 (V), Lafayette 1800, Midland 7001 (export), Petrusse Pacific 160, Superstar 2000, Tristar 777. Remove C120. (IN = T11/Q19, OUT = T12).

Foreign versions with PCMA001S main board:

Colt 2400, Falcon 2000, Lafayette 2400, Mongoose 2000, Thunder 2000, Nato 2000, Palomar 2400/5000, Starfire DX, Superstar 2200, Tristar 797/848: Remove C120. (IN = T11/Q19, OUT = T12).

Miscellaneous Rigs, Uniden AM/FM/SSB chassis:

Cobra 148GTL-DX (early, PC879): Remove C48. (IN = L6, OUT = L7/C49).
Cobra 148GTL-DX (late), Superstar 360FM (PB010): Remove C61.
(IN = L11, OUT = L12/C62).
Stalker ST9F-DX (PC893): Remove C57. (IN = L10, OUT = L11/C58).

New Uniden SSB chassis w/uPD2824 PLL (PC833, PC965 or similar):

Cobra 146GTL, President AR-144, AX-144, Midland 79-260, 6001, 7001 (new versions), Realistic TRC451, Sears 663.3810, Uniden PC244:
Remove C46. (IN = L6, OUT = L7/C47).

Others

Cybernet export Ham Jumbo III, Ham Multimode III (PTBM133A4X):
Remove C117 (2pF); (IN = T11/R96, OUT = T12).

Uniden President Grant (PC999):
Remove C61 (3pF); (IN = L11, OUT = L12/C62).

Galaxy 2100, Ranger AR3300:
Remove C24 (.001); (IN = C416/R1, OUT = R20/D8).

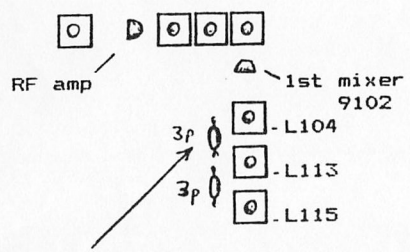
Superstar 3600, 3900, Excalibur (EPT360010Z):
Remove C58 (5pF); (IN = L10, OUT = L11/C59)

Uniden PB062 (Realistic TRC453):
Lift end of R6 (220 Ohm) going to L6/C43. This is in the NB area of TR1. Resolder instead to junction of L7/C44/C43. Now remove C43: This keeps the filter out of the NB loop.
(IN = L6 side, OUT = L7/C44/R6 side).

Uniden President Jackson (PB042):
Remove FT4; (IN = L8/C55, OUT = C16/C17/R74).

Note: May affect Noise Blanker performance in this chassis. There's nothing to be done about it since the CG filter is inside the NB loop; no other place to install it.

Uniden 2830 (President Lincoln)



Fit filter in place of this capacitor.

Copyright Design by CB City International (U.S.A.)
Authorized UK distributor S J Tonks (CB Components)
34 BRADFORD ST WALSALL West Midlands. WS2 9QT